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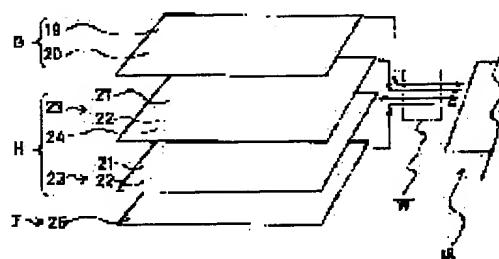
(72)Inventor : HIROSAKI KUNIIHIKO

(54) DECORATIVE PANEL

(57)Abstract:

PURPOSE: To provide a lightweight decorative panel having good appearance, hard to release and enhanced in abrasion resistance, light fastness and fire resistance by using pigment-containing fluoroplastic in decorative paper and using a prepreg wherein a specific resin is combined with a plain woven base material as a core material and applying a specific adhesive to the prepreg to subject the decorative paper and the coated prepreg to pressure molding.

CONSTITUTION: Surface decorative paper G has a film shape with a thickness of 50 μ m and is composed of colored fluoroplastic kneaded and mixed with pigment 19. A core material H has a two-layered structure and one extremely thin sheet thereof is obtained by applying an acrylic adhesive to a prepreg 23 wherein a phenol resin 22 is combined with a high density



plain woven base material 21 and the other one extremely thin sheet, thereof is composed of the prepreg 23 alone. Decorative paper 18 is obtained by successively setting and laminating the decorative paper G and the core material H and integrally molding and curing them in a molding process W by a co-cure molding method.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to a panel. That is, in the khat of the aircraft, a galley, and a coat closet, it is related with the panel used as the panel facing and panel sheathing material as interior material of the aircraft and others etc.

[0002]

[Description of the Prior Art] Generally as this kind of a panel, the web material made from plastics and the web material made from fiber reinforced plastics (product made from FRP) are used. However, the waist is weak, and the panel of the former, i.e., the web material made from plastics, had a difficulty in the on-the-strength side, required the handling in which it was easy to generate a blemish, a tear, etc. and they became skillful on the occasion of attachment to base materials, such as a panel, and had the difficulty that abrasion resistance, endurance, etc. are inferior on the occasion of use. On the other hand, the difficulty was pointed out to the thick side -- although the panel of the latter, i.e., the web material made from FRP, is excellent in the above-mentioned on-the-strength side, its price is also heavily high thickly -- the weight side, and the cost side. by the way, when to excel especially in refractoriness is demanded in many cases, for example, it is used as interior material of the aircraft, that calorific value and fuming are low as for this kind of panel etc. Since it is required that the severe predetermined fireproof criteria should be fulfilled, it replaces with what infiltrated the epoxy system resin into the weave base material as a panel of the web material made from FRP, and development use of what infiltrated the phenol system resin into the weave base material is being carried out recently.

[0003] Drawing 4 is forming explanatory drawing of the conventional example of the panel which consists of such a web material made from FRP. The laminating of a core material B and the protection material C is carried out to the surface tissue A, and while mutual pastes up in KO cure compression moulding technique, it comes to harden this conventional panel 1. First, Tissue A consists of four layer structures, and it comes to carry out the laminating of the white 1 fluoride fluorine system resin 5 to order by the 50-micron shape of 4 or 38 microns of pigments of the shape of transparent 1 fluoride fluorine system resin 2 of the shape of a 25-micron film, the acrylic adhesives 3, and a sheet, and a film. next, the core material B -- Chu-tzu -- the textile of textile -- it consists of two-layer structure which piled up two sheet-like prepregs 8 which infiltrated the phenol system resin 7 into the base material 6, and white 1 fluoride fluorine system resin 9 is further used by the shape of a 25-micron film as protection material C And further, after passing through the gravure processing process S of applying to the fluorine system resin 5 the coating process R which applies the acrylic adhesives 3 of such a tissue A to the fluorine system resin 2, and a pigment 4, the lamination process T which makes these Tissue A after an appropriate time, and carries out laminating processing, conventionally, the panel 1 was fabricated in one by enforcing KO cure compression moulding technique at the fabricating-operation process U.

[0004] By the way, drawing 5 is forming explanatory drawing of a panel developed by the artificer of this invention recently. The conventional example slack panel 10 developed recently [this] It comes to

carry out the laminating of a core material E and the protection material F to Tissue D. first as a surface tissue D Film-like 2 fluoride fluorine system resin 12, next the acrylic film-like adhesives 13 are minded by pigment 11 entering. as a sheet-like core material E Chu-tzu -- the textile of textile -- the prepreg 16 which combined the phenol system resin 15 with the base material 14 according to sinking in etc., and textile -- base-material 14 simple substance -- and The laminating of the white 1 fluoride fluorine system resin 17 is carried out to order by the shape of a film as protection material F, and by enforcing KO cure compression moulding technique at the fabricating-operation process V, while mutual pastes up, it comes to harden.

[0005]

[Problem(s) to be Solved by the Invention] By the way, if it was in the conventional panel 1 first shown in drawing 4, the following 1st, the 2nd, the 3rd, the 4th, and the 5th problem were pointed out. There was still a problem in the 1st first in a thick side and weight side and a cost side. Namely, while the tissue A consists of four layer structures of the predetermined fluorine system resin 2, the acrylic adhesives 3, a pigment 4, and the fluorine system resin 5, the conventional panel 1 of this drawing 4 Since the core material B consisted of two-layer structure of the predetermined prepreg 8, 1m, about 900g and thickness are [the weight per two] thick, thickness of the weight was heavy at 0.5mm, and there was a problem as interior material of the aircraft whose lightweight-ization etc. is an important problem etc. Moreover, the coating process R, the gravure processing process S, the lamination process T, the fabricating-operation process U, etc. were followed further, and the conventional panel 1 of this drawing 4 was fabricated, and since there were many processes, it also had the problem that a price was high, while it consisted of such multilayer structure.

[0006] It was easy to generate adhesion, mixing, etc. of an irregular color, a color omission, a wrinkling, irregularity, and a foreign matter, and the problem was [2nd] in the appearance side. That is, it consisted of multilayer structure like ****, since there are many processes at the time of fabrication and the conventional panel 1 of this drawing 4 had much movement while having many kinds of resin used, at the time of fabrication, it was easy to generate static electricity and it had, it originated in such static electricity, adhesion, mixing, etc. of an irregular color, a color omission, a wrinkling, irregularity, and a foreign matter occurred plentifully, the problem was in the appearance side, and the percent defective was high [the panel Since it was used for the part where people's eyes are touched especially with this panel 1 as interior material of the aircraft etc. as the panel facing and the panel sheathing materials of a product, such as a khat of the aircraft, a galley, and a coat closet, and a fine sight is thought as important, such poor appearance also spoiled product appearance and it had become a problem.

[0007] It was easy to come to a front face out of the handle of the weave base material 6, and the problem was in the 3rd also from this point in the appearance side. That is, it was easy to come to a front face out of the handle of the warp of the weave base material 6 of the prepreg 8 in a core material B, and the weft, i.e., the ground skin, through soft about 25 microns and the soft thin fluorine system resin 2 grade of Tissue A at the time of operation of the KO cure compression moulding technique of the fabricating-operation process U. And such poor appearance of the conventional panel 1 spoiled product appearance according to the above-mentioned, and it had become a problem.

[0008] Curl occurred, it was easy 4th to separate, and there was a problem also in a quality side. namely, Chu-tzu used for the prepreg 8 of a core material B -- the textile of textile -- the base material 6 has directivity and a flat thing obtains it -- having -- hard -- moreover -- this textile -- since rigidity is high, in the conventional panel 1 of drawing 4 which used such a prepreg 8 of two sheets for the core material B, firm curl tends to generate the prepreg 8 which infiltrated the phenol system resin 7 into the base material 6 Then, as interior material of the aircraft and others etc., it was in the flat base material plentifully to begin to separate from the periphery section of opposite *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne., and the panel 1 which curl generated in this way had a problem in the quality side, when sticking as the panel facing and the panel sheathing material of a product. Moreover, the handling which became skillful while use management of adhesives was complicated on the occasion of attachment, in order to prevent such peeling was required, and there was a difficulty that a man day starts very much.

[0009] There was also a problem that 5th it was inferior to on-the-strength sides and color fastness to light, such as abrasion resistance. That is, although the tissue A of the front face consisted of four layer structures of the transparent fluorine system resin 2, the acrylic adhesives 3, a pigment 4, and the fluorine system resin 5, while, as for the conventional panel 1 of this drawing 4, producing the problem in the on-the-strength side that it will be easy to wear out with such composition if it is used for a long time, misgiving was pointed out to color fastness to light that it is easy to discolor.

[0010] Now, about the panel 10 of drawing 5, it is as follows. That is, that the conventional example slack panel 10 developed recently shown in this drawing 5 should solve each trouble of the conventional panel 1 of drawing 4, it is made and the 1st, the 2nd, the 3rd, the 4th, and the 5th trouble which were mentioned above are solved considerably. That is, since there are [1st] few laminated structures, 1m, about 700g and thickness are [the weight per two] thin, thickness of a weight is light at 0.4mm, as for this panel 10, the number of processes is cut down further, and fabrication is easy and is obtained cheaply. Since there are little number of processes at the time of fabrication and movement while there are [2nd] few number of laminated structures and kinds of resin, it is hard to generate static electricity, and poor appearance, such as adhesion, mixing, etc. of the irregular color resulting from static electricity, a color omission, a wrinkling, irregularity, and a foreign matter, is prevented considerably. Tissue D consists of a fluorine system resin 12 with which the pigment 11 was mixed, and is excellent in rigidity and an on-the-strength side, and since it is thick to the 3rd, the poor appearance out of which the handle of the weave base material 14 of a core material E comes to a front face is considerably prevented by it. Since one sheet weaves a core material E to the 4th, it is set to it from base-material 14 simple substance, the amount of the phenol system resin 12 has flexible nature comparatively few and it is hard to generate firm curl, when sticking as interior material etc., it is rare to begin to separate from the periphery section. As for the surface tissue D, the fluorine system resin 12 is reinforced [5th] with the pigment 11, and it excels in abrasion resistance, color fastness to light, etc.

[0011] However, even if still more nearly overall rigidity and the on-the-strength side might fall victim a little about the conventional example slack panel 10 developed recently shown in this drawing 5, there was also a request that you want to put into practice further the above-mentioned 1st, the 2nd, the 3rd, and 4th each point. namely, the thing which this panel 10 excelled [mm / 0.4] in thickness more 1m in the thick side and weight side and the cost side the 1st although the weight per two was about 700g -- ** -- there was also a request Although the thing of the about 50-micron shape of a thick film is used since the acrylic adhesives 13 which paste up especially Tissue D and a core material E on the 2nd are not entering a base material When this point set the cause of the increase in the number of processes, carried out a laminating and enforced KO cure compression moulding technique further, poor appearance, such as adhesion, mixing, etc. of the irregular color to which it is easy to generate, and static electricity has and still originates in static electricity, a color omission, a wrinkling, irregularity, and a foreign matter, might generate it. the 3rd -- the textile of a core material E -- Chu-tzu of a base material 14 -- generating with poor appearance out of which it comes to a front face through Tissue D although it is slight, the handle, i.e., the ground skin, of textile, was still pointed out the 4th -- Chu-tzu of a core material E -- the textile of textile -- the base material 14 was not able to sweep away completely beginning to separate from the periphery section, when it is still easy to generate curl and sticks as interior material etc., since it has directivity and a flat thing is hard to be obtained

[0012] While this invention is made in view of such the actual condition and using the fluorine system resin containing a pigment for a tissue By having used what carried out the coat of the acrylic adhesives to the weave base material of a high-density plain weave as one sheet of a core material to the prepreg which combined the phenol system resin To the 1st, it is lightly cheap very thinly, and the poor appearance by static electricity is certainly prevented [2nd]. It aims at proposing the panel which comes to excel also in the 6th refractoriness extremely while there is also no peeling the poor appearance out of which the handle of a weave base material comes to a front face the 3rd is prevented certainly, and according to the 4th curl and the 5th abrasion resistance and color fastness to light improve in these further.

[0013]

[Means for Solving the Problem] The technical means of this invention which attains this purpose are as follows. That is, this panel is hardened while it comes to carry out the laminating of the film-like fluorine system resin containing a pigment, the thing which carried out the coat of the acrylic adhesives to the degree as a sheet-like core material to the prepreg which combined the phenol system resin with the weave base material of a high-density plain weave, and this prepreg simple substance to order as a surface tissue and mutual pastes up in KO cure compression moulding technique.

[0014]

[Function] Since this invention consists of such a means, it acts as follows. The fluorine system resin with which the pigment was mixed as a surface tissue is used, and what carried out the coat of the acrylic adhesives to one sheet of a core material to the prepreg which combined the phenol system resin with the weave base material of a high-density plain weave is used, and it comes to fabricate this panel in KO cure compression moulding technique in one. Then, this panel is set to the 1st, the coat of the acrylic adhesives is carried out to the prepreg of a core material, and since there are very few laminated structures, a weight is also thinly light [thickness] very. Furthermore, it is cut down sharply and the number of processes is obtained simply easily [fabrication] and very cheaply. Poor appearance, such as adhesion, mixing, etc. of the irregular color which static electricity does not occur, but has in it, and originates in static electricity since the 2nd has less number of processes at the time of fabrication and movement while having few number of laminated structures and kinds of resin in this way, a color omission, a wrinkling, irregularity, and a foreign matter, is prevented certainly. In addition to the thing out of which the weave base material of a core material consists of a high-density plain weave, and a handle cannot come [3rd] easily, a surface tissue consists of a fluorine system resin with which the pigment was mixed, and it excels in rigidity and an on-the-strength side, and since it is thick, the poor appearance out of which the handle of the weave base material of a core material comes to a front face is certainly prevented by these. The weave base material of a core material consists [4th] of a high-density plain weave, and since directivity is a flat comparatively few, when it is hard to generate curl and sticks as interior material etc., it does not begin to separate from the periphery section. As for the surface tissue, the fluorine system resin is reinforced [5th] with the pigment with these, and it excels in abrasion resistance, color fastness to light, etc. Calorific value, fuming, etc. are extremely excellent in refractoriness low by having used the phenol system resin into the core material the 6th etc.

[0015]

[Example] Below, this invention is explained in detail based on the example shown in a drawing. Drawing 1 is forming explanatory drawing of the example of this invention. In addition, expansion explanatory drawing at the time of fabrication according [drawing 2] to KO cure compression moulding technique and drawing 3 are cross-section explanatory drawings of a honeycomb panel. The laminating of the thing which carried out the coat of the acrylic adhesives 24 to the film-like fluorine system resin 20 containing pigment 19 and the degree as a sheet-like core material H as a surface tissue G to the prepreg 23 which combined the phenol system resin 22 with the weave base material 21 of a high-density plain weave, prepreg 23 simple substance, and the protection material J is carried out to order, and while mutual pastes up in KO cure compression moulding technique, it comes to harden this panel 18.

[0016] If these are explained in full detail, first, nothing and a pigment 19 elaborate on the shape of a 50-micron film, and the surface tissue G will be crowded and will consist of a 2 fluoride fluorine system resin 20 mixed and colored. Next, a core material H consists of two-layer structure, one sheet of the shape of an ultra-thin sheet consists of what carried out the coat of the acrylic adhesives 24 to the prepreg 23 which combined the phenol system resin 22 with the weave base material 21 of a high-density plain weave first, and one sheet of other shape of an ultra-thin sheet consists of prepreg 23 simple substances. textile -- what the base material 21 was equipped with warp and the weft with the plain weave with high-density glass fiber, Kevlar fiber, carbon fibers, these high Brit fiber, etc., and was woven -- becoming -- other textile -- the one direction only of a base material or warp -- a base material -- **, such as what is called YUNI, are distinguished As a weave base material 21 of such a high-density plain weave, the 60x60 thing is used per 1 inch square in the example of illustration. A prepreg 23

comes to combine the phenol system resin 22 with such a weave base material 21 by sinking in, adhesion, the polymerization, etc., and the weave base material 21 and the phenol system resin 22 are used at a rate of 6 to 4 by the weight ratio. And the coat of the acrylic adhesives 24 is carried out to one side by the side of the tissue G by the application like the above-mentioned at the prepreg 23 by the side of Tissue G. Moreover, as protection material J, white 1 fluoride fluorine system resin 25 is used by the shape of a 25-micron film.

[0017] And this panel 18 is fabricated in one to that to which these were set to in order and the laminating was carried out by enforcing KO cure compression moulding technique at the fabricating-operation process W. Thereby, KO cure compression moulding technique remains as it is, without once stiffening the prepreg 23 of a core material H unlike the so-called hardening method, and it consists of a method which pastes up between Tissue G, a core material H, and the protection material J etc. by pressurization heating, and while mutual pastes up, each hardens, a prepreg 23 FRP-izes, and the predetermined panel 18 is obtained. in addition, one example of the KO cure compression moulding technique of such [[drawing 2](#)] a fabricating-operation process W -- being shown -- metal mold -- a crepe pattern is formed in the tissue G of the front face of a panel 18 through the separator paper 28 of the irregularity of the version 27 of 26 front face Now, as interior material of the aircraft and others etc., although this panel 18 is used as the panel facing and the panel sheathing material of the khat of the aircraft, a galley, and a coat closet, [drawing 3](#) shows one example of such a honeycomb panel P. That is, although, as for the honeycomb panel P, the panel facing X and Y is stuck on both sides of a honeycomb core Q, and it becomes, as shown in [drawing 3](#) , and the panel sheathing material Z may be suitably stuck like further illustration on the panel facing X by the side of one front face, when, as for a panel 18, the panel sheathing material Z is used on the panel facing X, for example as panel facing X of one of these, it is used as a panel sheathing material Z.

[0018] The panel 18 of this invention is as mentioned above. Then, it is as follows. First, as a surface tissue G, the nothing pigment 19 elaborates on the shape of a film, it is crowded with these panels 18, and the fluorine system resin 20 mixed and colored is used by them. Moreover, the prepreg 23 of the shape of a sheet which combined the phenol system resin 22 with the weave base material 21 of a plain weave high-density to one pair by the side of the tissue G of a core material H is received. What carried out the coat of the acrylic adhesives 24 is used, and the sheet-like prepreg 23 simple substance is further used for other one sheet of a core material H. And while pasting up with the acrylic adhesives 24 with which it came to fabricate these in one, and the coat of between Tissue G and a core material H was carried out to the prepreg 23 of a core material H by this panel's 18 carrying out the laminating of such a tissue G, a core material H, and the protection material J to order, and enforcing KO cure compression moulding technique at the fabricating-operation process W, it pastes up with the phenol system resin 22 of both the prepreps 23 for two sheets of a core material H. Now, this panel 18 becomes there like the following 1st, the 2nd, the 3rd, the 4th, the 5th, and the 6th.

[0019] While the tissue G is set to the 1st from the fluorine system resin 20 containing pigment 19, this panel 18 One in a core material H comes to use what carried out the coat of the acrylic adhesives 24 to the prepreg 23 (like the panel 10 of [drawing 5](#)). the acrylic adhesives 13 of the shape of an about 50-micron film are not used by the one-sheet independent -- since there are very few laminated structures as four sheets, 1m, thickness is very thin and thickness of a weight is [the weight per two] as light as about 500g at 0.35mm namely, in the panel 1 of this seed conventional example of [drawing 4](#) Also by the conventional example slack panel 10 which about 900g of weights per two is thick 1m by 0.5mm, and was developed recently [of [drawing 5](#)] Even if thickness compares with the thing of [drawing 5](#) by this panel 18 to the weight per two having been about 700g 1m by 0.4mm, thickness is thin about 12% and the weight is light about 30%.

[0020] Moreover, since it is further fabricated by enforcing KO cure compression moulding technique at the fabricating-operation process W and the number of processes at the time of fabrication is sharply cut down while this panel 18 has few laminated structures in this way, fabrication is obtained simply easily and very cheaply. Namely, the panel 1 of this seed conventional example of [drawing 4](#) follows the coating process R, the gravure processing process S, the lamination process T, and the fabricating-

operation process U, and is fabricated. There are very many processes at the time of fabrication, and it compares with having taken time in the process which the acrylic adhesives 13 of the shape of a film of one sheet are set also in the panel 10 of drawing 5, and carries out a laminating. this panel 18 All the starting processes are needlessness and it is fabricated cheaply that what is necessary is just to enforce KO cure compression moulding technique to that by which the laminating was set and carried out.

[0021] In this way, this panel 18 has few laminated structures, and by cutting down the number of processes at the time of fabrication, while there are few kinds of resin used, since the 2nd has less movement, in it, static electricity does not generate it at the time of fabrication. Therefore, generating of adhesion, mixing, etc. of the irregular color resulting from static electricity, a color omission, a wrinkling, irregularity, and a foreign matter is prevented certainly, this panel 18 is compared with the panel 1 of this seed conventional example of drawing 4, and the panel 10 of drawing 5, and poor appearance decreases certainly.

[0022] This panel 18 is first set to the 3rd from a plain weave with the high-density weave base material 21 of a core material H, and it adds to what a handle cannot come out of easily. the surface tissue G It consists of a fluorine system resin 20 with which the pigment 19 was mixed and reinforced, it excels in rigidity and an on-the-strength side, and since it is thick, in the time of operation of the KO cure compression moulding technique of the fabricating-operation process W etc., it is hard to come out of the handle, i.e., the ground skin, of the warp of the weave base material 21 of a core material H, and the weft to a front face by these. namely, -- first -- the panel 10 of drawing 5 -- the textile of a core material E -- Chu-tzu of a base material 14 -- if it is in this panel 18 that the handle of textile comes out to a front face compared with still having been pointed out -- the textile of a core material H -- since it comes to use the thing of a high-density plain weave for a base material 21, it is very hard to come out of a handle Moreover, like the panel 1 of this seed conventional example of drawing 4, the fluorine system resin 2 of Tissue A is softly as thin as about 25 microns, and if it is in this panel 18 compared with having been easy to come to a front face out of the handle of the weave base material 6 of a core material B, the poor appearance out of which the handle of the weave base material 21 of a core material H comes to a front face with strong about 50 microns and the strong thick tissue G is prevented certainly.

[0023] Since it consists of a plain weave with the high-density weave base material 21 of a core material H and directivity tends to serve as a flat comparatively few the 4th, on the whole, curl cannot generate this panel 18 easily. namely, the panel 1 of this seed conventional example of drawing 4 -- as a core material B -- the predetermined prepreg 8 of two sheets -- using -- the curl with it -- generating -- easy -- moreover, the panel 10 of drawing 5 -- Chu-tzu of a core material E -- the textile of textile -- since the base material 14 has directivity and a flat thing is hard to be obtained, compared with generating of curl still having been pointed out, it is hard coming to generate curl in this panel 18 [high rigidity and]

[firm Then, as interior material of the aircraft and others etc., this panel 18 does not begin to separate from the periphery section to (refer to drawing 3) and a flat base material (a honeycomb core Q or panel facing X), when stuck as the panel facing X and the panel sheathing material Z of a product.

[0024] The tissue G of the front face of this panel 18 is set to the 5th from the film-like fluorine system resin 20 which the pigment 19 scoured and was colored by being crowded. Then, it compares with the tissue A which arranged the sheet-like pigment 4 and was colored the bottom of the transparent fluorine system resin 2 of the shape of a surface film like the panel 1 of this seed conventional example of drawing 4, and, as for the tissue G of this panel 18, the fluorine system resin 20 is reinforced with the pigment 19. Therefore, even if it uses this tissue G and a panel 18 for a long time, while they are [that it is hard to wear out] excellent in abrasion resistance etc., the degree evaluation of discoloration is [that it is hard to discolor] highly excellent in color fastness to light.

[0025] By having used the phenol system resin 22 into the core material H etc., in case of the fire, as for this panel 18, calorific value, fuming, etc. are low, and extremely excellent in refractoriness with these.

[6th] Then, this panel 18 can fulfill the severe predetermined fireproof criteria in a calorific value measurement examination or a fuming examination, when used as interior material of the aircraft.

[0026] In addition, if it is in the panel 18 of the example of illustration, the film of a non-extended type is used as a 2 fluoride fluorine system resin 20 containing pigment 19 of the tissue G. Then, it compares

with the thing which comes to use a biaxial extension type film as a 1 fluoride fluorine system resin of the tissue A like the panel 1 of this seed conventional example of drawing 4 , and when the tissue G of this panel 18 enforces KO cure compression moulding technique at the part and the fabricating-operation process W which are not extended and pulled, directivity cannot come out of it easily. Therefore, Tissue G and the panel 18 of the example of illustration are compared with Tissue A and the panel 1 of the conventional example of drawing 4 also from this point, and have the advantage that generating of a wrinkling, irregularity, curl, etc. is prevented.

[0027]

[Effect of the Invention] The panel concerning this invention demonstrates the following 1st, the 2nd, the 3rd, the 4th, the 5th, and the 6th effect by having used what carried out the coat of the acrylic adhesives to the weave base material of a high-density plain weave to the prepreg which combined the phenol system resin at one sheet of a core material while using the fluorine system resin containing a pigment for a tissue, as explained above.

[0028] It excels in the 1st very much in the thick side and weight side and the cost side. That is, its weight is also light while this panel has very thin thickness, and it is the the best for the interior material of the aircraft whose lightweight-ization etc. is an important problem, and others etc., and, moreover, fabrication is obtained simply easily and very cheaply.

[0029] The poor appearance by static electricity is prevented [2nd] certainly, and it excels in the appearance side extremely. That is, for this panel, poor appearance, such as adhesion, mixing, etc. of the irregular color which originates in static electricity since static electricity does not occur at the time of fabrication, a color omission, a wrinkling, irregularity, and a foreign matter, is prevented, and a percent defective is very also a low. As interior material of the aircraft and others etc., as panel facing and panel sheathing materials, such as a khat, a galley, and a coat closet, since especially this panel is used for the part where people's eyes are touched and a fine sight is thought as important, it raises product appearance by excelling in an appearance side extremely in this way.

[0030] The poor appearance out of which the handle of a weave base material comes to a front face is certainly prevented by the 3rd, and it excels in it extremely also from this point in the appearance side. That is, since the handle of the warp of a weave base material used into a core material and the weft, i.e., the ground skin, does not come out to a front face but this panel is extremely excellent in the appearance side, it is used for the part with which people's eyes are touched according to the place mentioned above, and raises product appearance.

[0031] There is no peeling by curl and it excels [4th] also in the quality side. That is, as interior material of the aircraft and others etc., since there is little directivity of a core material and it is hard to generate curl, when stuck as for example, panel facing or a panel sheathing material, it is very excellent [this panel] in the quality side so that it may not begin to separate in a flat base material from the periphery section of opposite *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne. Then, on the occasion of attachment, there is also no ** which requires the handling which use management of adhesives was not complicated and became skillful, and a man day is cut down.

[0032] It excels [5th] also in on-the-strength sides and color fastness to light, such as abrasion resistance, with these. That is, this panel is [that it is hard to discolor] excellent also in color fastness to light while excelling [be / hard to wear / even if it uses it for a long time / out / it] in an on-the-strength side.

[0033] It excels in the 6th and refractoriness extremely. That is, this panel is the the best for the interior material of the aircraft by which calorific value, fuming, etc. are extremely excellent in refractoriness low, and high-level refractoriness is demanded, and others etc. Thus, some which make it remarkable and become size have the effect which this invention demonstrates -- the trouble which consisted in this seed conventional example is swept away.

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(71)出願人 000187208

昭和飛行機工業株式会社

東京都新宿区西新宿一丁目13番12号

(72)発明者 広崎 邦彦

東京都昭島市田中町600番地 昭和飛行機
工業株式会社内

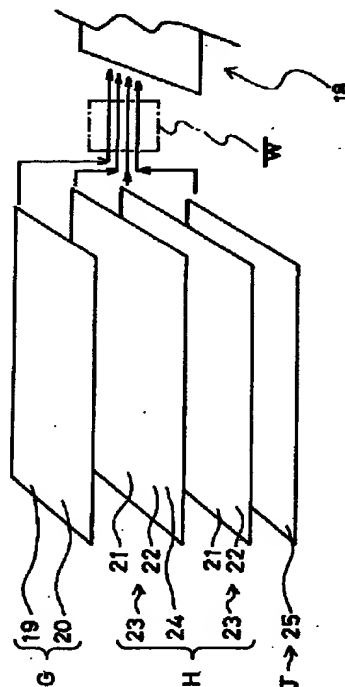
(74)代理人 弁理士 合志 元延

(54)【発明の名称】 化粧板

(57)【要約】

【目的】 第1に、極めて肉厚が薄く重量が軽くコストも安く、第2に、色むら、色抜け、しわ、凹凸、異物の付着・混入等の外観不良が確実に防止され、第3に、織り基材の柄が表面に出る外観不良も確実に防止され、第4に、カールによる剥がれがなく、これらと共に第5に、耐摩耗性や耐光堅牢度に優れ、第6に、発熱量や発煙性等が低く耐火性にも極めて優れてなる、化粧板を提案する。

【構成】 この化粧板18は、表面の化粧紙Gとしてフィルム状の顔料19入りフッ素系樹脂20、次にシート状の芯材Hとして、高密度な平織りの織り基材21にフェノール系樹脂22を含浸等により組み合わせたアリアレグ23に対し、アクリル系接着剤24をコートしたもの、およびアリアレグ23単体、更に保護材Jが、順に積層されている。そして、コ・キュア加圧成形法により相互間が接着されると共に硬化され、一体的に成形されてなる。



【特許請求の範囲】

【請求項1】 表面の化粧紙としてフィルム状の顔料入りフッ素系樹脂、次にシート状の芯材として、高密度な平織りの織り基材にフェノール系樹脂を組み合わせたアブリレグに対しアクリル系接着剤をコートしたもの、および該アブリレグ単体が、順に積層されてなり、コ・キュア加压成形法にて相互間が接着されると共に硬化されていること、を特徴とする化粧板。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は化粧板に関する。すなわち、航空機その他の内装材等として、例えば航空機のカート、ギャレー、コートクロゼットにおいて、そのパネル表面材やパネル外装材として使用される、化粧板に関するものである。

【0002】

【従来の技術】この種の化粧板としては、一般にプラスチック製シート材や繊維強化プラスチック製（FRP製）シート材が用いられている。しかしながら、前者つまりプラスチック製シート材の化粧板は、腰が弱く強度面に難点があり、例えば、パネル等の母材への貼り付けに際し傷や破れ等が発生し易く熟練した取り扱いを要し、又、使用に際し耐摩耗性や耐久性等が劣るという難点があった。他方、後者つまりFRP製シート材の化粧板は、上述の強度面には優れているものの、厚く重く価格も高い等、肉厚面、重量面、コスト面に難点が指摘されていた。ところでこの種の化粧板は、発熱量や発煙性が低い等、特に耐火性に優れていることが要求されることが多く、例えば航空機の内装材として使用される場合には、所定の厳しい耐火基準を満たすことが要求されるので、FRP製シート材の化粧板としては、織り基材にエポキシ系樹脂を含浸させたものに代え、最近では、織り基材にフェノール系樹脂を含浸させたものが開発使用されつつある。

【0003】図4は、このようなFRP製シート材よりなる化粧板の従来例の成形説明図である。この従来例の化粧板1は、表面の化粧紙Aと芯材Bと保護材Cとが積層され、コ・キュア加压成形法にて相互間が接着されると共に硬化されてなる。まず、化粧紙Aは4層構造よりなり、25ミクロンのフィルム状の透明な1フッ化フッ素系樹脂2、アクリル系接着剤3、シート状の顔料4、38ミクロン又は50ミクロンのフィルム状で白色の1フッ化フッ素系樹脂5が順に積層されてなる。次に芯材Bは、朱子織りの織り基材6にフェノール系樹脂7を含浸させたシート状のアブリレグ8を2枚重ねた2層構造よりなり、更に保護材Cとしては、25ミクロンのフィルム状で白色の1フッ化フッ素系樹脂9が用いられている。そして従来は、このような化粧紙Aのアクリル系接着剤3をフッ素系樹脂2に塗る塗工工程Rや、顔料4をフッ素系樹脂5に塗るグラビア加工工程Sや、更にしか

る後、これらを化粧紙Aとして積層加工するラミネート加工工程T等を経た後、成形加工工程Uにてコ・キュア加压成形法を実施することにより、化粧板1が一体的に成形されていた。

【0004】ところで図5は、本発明の発明者により最近開発された化粧板の成形説明図である。この最近開発された従来例たる化粧板10は、化粧紙Dと芯材Eと保護材Fとが積層されてなり、まず、表面の化粧紙Dとして、顔料11入りでフィルム状の2フッ化フッ素系樹脂12、次に、フィルム状のアクリル系接着剤13を介し、シート状の芯材Eとして、朱子織りの織り基材14にフェノール系樹脂15を含浸等により組み合わせたアブリレグ16、および織り基材14単体、そして、保護材Fとしてフィルム状で白色の1フッ化フッ素系樹脂17が順に積層され、成形加工工程Vにてコ・キュア加压成形法を実施することにより、相互間が接着されると共に硬化されてなる。

【0005】

【発明が解決しようとする課題】ところで、まず図4に示した従来例の化粧板1にあつては、次の第1、第2、第3、第4、第5の問題が指摘されていた。まず第1に、肉厚面、重量面、コスト面に依然として問題があった。すなわち、この図4の従来例の化粧板1は、その化粧紙Aが所定のフッ素系樹脂2、アクリル系接着剤3、顔料4、フッ素系樹脂5の4層構造よりなると共に、芯材Bも所定のアブリレグ8の2層構造よりなるので、厚みが0.5mmで1㎡当たりの重量が900g程度と、肉厚が厚く重量も重く、発熱化等が重要課題である航空機の内装材等としては問題があった。又、この図4の従来例の化粧板1は、このような多層構造よりなると共に、更に塗工工程R、グラビア加工工程S、ラミネート加工工程T、成形加工工程U等を辿って成形され、工程数が多いので、価格が高いという問題もあった。

【0006】第2に、色むら、色抜け、しわ、凹凸、異物の付着・混入等が発生しやすく、外観面に問題があった。すなわち、この図4の従来例の化粧板1は、上述のごとく多層構造よりなり、用いられる樹脂の種類が多いと共に、成形時の工程数が多く移動が多いので、成形時に静電気が発生しやすく、もって、このような静電気に起因して色むら、色抜け、しわ、凹凸、異物の付着・混入等が多々発生し、外観面に問題があり不良率が高かった。特に、この化粧板1は航空機の内装材等として、例えば航空機のカート、ギャレー、コートクロゼット等の製品のパネル表面材やパネル外装材として、人の目にふれ美観が重視される箇所に使用されるので、このような外観不良は製品外観をも損ない問題となっていた。

【0007】第3に、織り基材6の柄が表面に出やすく、この点からも外観面に問題があった。すなわち、芯材Bにおけるアブリレグ8の織り基材6の縦糸と横糸の柄、つまり生地肌が、成形加工工程Uのコ・キュア加压

成形法の実施時において、化粧紙Aの柔らかく25ミクロン程度と薄いフッ素系樹脂2等を介し、表面に出やすかった。そして、このような従来の化粧板1の外観不良も、前述に準じ製品外観を損ない問題となっていた。

【0008】第4に、カールが発生して剥がれやすく、品質面にも問題があった。すなわち、芯材Bのアリアレグ8に用いられる朱子織りの織り基材6は、方向性を有しておりフラットなものが得られ難く、しかも、この織り基材6にフェノール系樹脂7を含浸させたアリアレグ8は剛性が高いので、このような2枚のアリアレグ8を芯材Bに用いた図4の従来の化粧板1では、強固なカールが発生しやすい。そこで、このようにカールが発生した化粧板1は、航空機その他の内装材等として、例えば製品のパネル表面材やパネル外装材として貼り付ける場合に、フラットな母材に対しその外周部から剥がれ出すことが多々あり、品質面に問題があった。又、このような剥がれを防止するためには、貼り付けに際し、接着剤の使用管理が複雑化すると共に熟練した取り扱いを要し、工数が非常にかかるという難点があった。

【0009】第5に、耐摩耗性等の強度面や耐光堅牢度に劣るという問題もあった。すなわち、この図4の従来の化粧板1は、その表面の化粧紙Aが透明なフッ素系樹脂2、アクリル系接着剤3、顔料4、フッ素系樹脂5の4層構造よりなるが、このような構成では、長時間使用すると摩耗しやすく強度面に問題を生じると共に、変色しやすく耐光堅牢度に不安が指摘されていた。

【0010】さて、図5の化粧板10については、次の通り、すなわちこの図5に示した最近開発された従来例たる化粧板10は、図4の従来の化粧板1の各問題点を解決すべくなされたものであり、上述した第1、第2、第3、第4、第5の問題点はかなり解決されている。すなわち、この化粧板10は、第1に、積層構造の数が少ないので、厚みが0.4mmで1㎡当りの重量が700g程度と、肉厚が薄く重量も軽く、更に工程数が削減されており、成形が容易で安価に得られる。第2に、積層構造の数および樹脂の種類が少ないと共に、成形時の工程数および移動が少ないので静電気が発生しにくく、静電気に起因する色むら、色抜け、しわ、凹凸、異物の付着・混入等の外観不良が、かなり防止される。第3に、化粧紙Dは顔料11が混入されたフッ素系樹脂12よりなり、剛性、強度面に優れ厚いので、芯材Eの織り基材14の柄が表面に出る外観不良も、かなり防止される。第4に、芯材Eは1枚が織り基材14単体よりなり、フェノール系樹脂12の量が比較的少なくフレキシブル性を有しており、強固なカールが発生しにくいので、内装材等として貼り付ける場合に外周部から剥がれ出すことは少ない。第5に、表面の化粧紙Dはフッ素系樹脂12が顔料11にて補強されており、耐摩耗性や耐光堅牢度等に優れている。

【0011】しかしながら、この図5に示した最近開発

された従来例たる化粧板10に関しては、更に、全体的な剛性、強度面が若干犠牲になるようなことがあっても、上述の第1、第2、第3、第4の各点をより一層徹底させたいとの要請もあった。すなわち第1に、この化粧板10は、厚みが0.4mmで1㎡当りの重量が700g程度であるが、より肉厚面、重量面、そしてコスト面に優れたものをとの要望もあった。第2に、特に化粧紙Dと芯材Eとを接着するアクリル系接着剤13は、基材入りではないので50ミクロン程度の厚いフィルム状のものが用いられているが、この点は更に、工程数増加の原因ともなり、セットして積層しコ・キュア加圧成形法を実施する際に静電気が発生しやすく、もって、依然として静電気に起因する色むら、色抜け、しわ、凹凸、異物の付着・混入等、外観不良が発生することがあった。第3に、芯材Eの織り基材14の朱子織りの柄つまり生地肌、化粧紙Dを介し僅かではあるが表面に出る外観不良の発生が、依然指摘されていた。第4に、芯材Eの朱子織りの織り基材14は、方向性を有しておりフラットなものが得られ難いので、依然としてカールが発生しやすく、内装材等として貼り付ける場合に外周部から剥がれ出すことを、完全に掃することはできなかった。

【0012】本発明は、このような実情に鑑みなされたものであって、化粧紙に顔料入りフッ素系樹脂を用いると共に、芯材の1枚として、高密度な平織りの織り基材にフェノール系樹脂を組み合わせたアリアレグに対し、アクリル系接着剤をコートしたものをを用いたことにより、第1に、極めて薄く軽く安価であり、第2に、静電気による外観不良が確実に防止され、第3に、織り基材の柄が表面に出る外観不良も確実に防止され、第4に、カールによる剥がれもなく、更にこれらと共に第5に、耐摩耗性や耐光堅牢度が向上すると共に、第6に、耐火性にも極めて優れてなる、化粧板を提案することを目的とする。

【0013】

【課題を解決するための手段】この目的を達成する本発明の技術的手段は次のとおりである。すなわち、この化粧板は、表面の化粧紙としてフィルム状の顔料入りフッ素系樹脂、次にシート状の芯材として、高密度な平織りの織り基材にフェノール系樹脂を組み合わせたアリアレグに対しアクリル系接着剤をコートしたもの、および該アリアレグ単体が、順に積層されてなり、コ・キュア加圧成形法にて相互間が接着されると共に硬化されている。

【0014】

【作用】本発明は、このような手段よりなるので、次のように作用する。この化粧板は、表面の化粧紙として顔料が混入されたフッ素系樹脂が用いられ、又、芯材の1枚に、高密度な平織りの織り基材にフェノール系樹脂を組み合わせたアリアレグに対し、アクリル系接着剤をコ

ートしたものが用いられ、コ・キュア加圧成形法にて一体的に成形されてなる。そこでこの化粧板は、第1に、アクリル系接着剤は芯材のアリアレグにコートされており、積層構造の数が非常に少ないので、極めて肉厚が薄く重量も軽い。更に工程数が大幅に削減され、成形が簡単容易で極めて安価に得られる。第2に、このように積層構造の数および樹脂の種類が少なく共に、成形時の工程数および移動が一段と少ないので、静電気が発生せず、もって、静電気に起因する色むら、色抜け、しわ、凹凸、異物の付着・混入等の外観不良は確実に防止される。第3に、芯材の織り基材が高密度な平織りよりなり柄が出にくいのに加え、表面の化粧紙は顔料が混入されたフッ素系樹脂よりなり剛性、強度面に優れ厚いので、これらにより、芯材の織り基材の柄が表面に出る外観不良も確実に防止される。第4に、芯材の織り基材が高密度な平織りよりなり、方向性が少なく比較的フラットなので、カールが発生しにくく、内装材等として貼り付ける場合に、外周部から剥がれ出すことはない。これらと共に第5に、表面の化粧紙はフッ素系樹脂が顔料にて補強されており、耐摩耗性や耐光堅牢度等に優れている。第6に、フェノール系樹脂を芯材中に用いたこと等により、発熱量や発煙性等が低く耐火性に極めて優れている。

【0015】

【実施例】以下本発明を、図面に示すその実施例に基づいて詳細に説明する。図1は本発明の実施例の成形説明図である。なお、図2はコ・キュア加圧成形法による成形時の拡大説明図、図3はハニカムパネルの断面説明図である。この化粧板18は、表面の化粧紙Gとして、フィルム状の顔料19入りフッ素系樹脂20、次にシート状の芯材Hとして、高密度な平織りの織り基材21にフェノール系樹脂22を組み合わせたアリアレグ23に対し、アクリル系接着剤24をコートしたもの、およびアリアレグ23単体、そして保護材Jが順に積層され、コ・キュア加圧成形法にて相互間が接着されると共に硬化されてなる。

【0016】これらについて詳述すると、まず表面の化粧紙Gは、50ミクロンのフィルム状をなし、顔料19が練り込まれ混入されて着色された2フッ化フッ素系樹脂20よりなる。次に、芯材Hは2層構造よりなり、まず極薄のシート状の1枚は、高密度な平織りの織り基材21にフェノール系樹脂22を組み合わせたアリアレグ23に対し、アクリル系接着剤24をコートしたものよりなり、他の極薄のシート状の1枚は、アリアレグ23単体よりなる。織り基材21は、ガラス繊維、ケブラー繊維、カーボン繊維、これらのハイブリット繊維等が、高密度な平織りにて縦糸と横糸を備えて織られたものよりなり、その他の織り基材や縦糸のみの一方向基材たるユニと称されるもの、等々とは区別される。このような高密度な平織りの織り基材21として、図示例では1イ

ンチ平方当り60本×60本のものが使用されている。アリアレグ23は、このような織り基材21にフェノール系樹脂22を、含浸、付着、重合等により組み合わせとなり、織り基材21とフェノール系樹脂22は重量比で6対4の割合で用いられている。そして、前述のごとく化粧紙G側のアリアレグ23には、その化粧紙G側の片面にアクリル系接着剤24が塗布によりコートされている。又、保護材Jとしては、25ミクロンのフィルム状で白色の1フッ化フッ素系樹脂25が用いられている。

【0017】そしてこの化粧板18は、これらが順にセットされて積層されたものに対し、成形加工工程Wにてコ・キュア加圧成形法を実施することにより、一体的に成形される。コ・キュア加圧成形法は、いわゆる硬化法とは異なり、芯材Hのアリアレグ23を一旦硬化させることなくそのまま、加圧加熱により化粧紙G、芯材H、保護材J間等を接着する方式よりなり、これにより、相互間が接着されると共に各々が硬化してアリアレグ23がFRP化し、所定の化粧板18が得られる。なお図2は、このような成形加工工程Wのコ・キュア加圧成形法の1例を示し、金型26表面の版27の凹凸により、セパレーター紙28を介し化粧板18の表面の化粧紙Gに梨地模様が形成されるようになっている。さてこの化粧板18は、航空機その他の内装材等として、例えば航空機のカート、ギャレー、コートクロゼットのパネル表面材やパネル外装材として使用されるが、図3はこのようなハニカムパネルPの1例を示す。すなわち、図3に示すようにハニカムパネルPは、ハニカムコアCの両面にパネル表面材X、Yが貼り付けられてなり、更に図示のように適宜、一方の表面側のパネル表面材X上にパネル外装材Zが貼り付けられる場合もあるが、化粧板18は、例えばこの一方のパネル表面材Xとして、又は、パネル表面材X上にパネル外装材Zが用いられる場合はパネル外装材Zとして用いられる。

【0018】本発明の化粧板18は、以上のようになっている。そこで以下のようになる。この化粧板18では、まず表面の化粧紙Gとして、フィルム状をなし顔料19が練り込まれ混入されて着色されたフッ素系樹脂20が用いられ、又、芯材Hの化粧紙G側の1枚には、高密度な平織りの織り基材21にフェノール系樹脂22を組み合わせたシート状のアリアレグ23に対し、アクリル系接着剤24をコートしたものが用いられ、更に、芯材Hの他の1枚には、シート状のアリアレグ23単体が用いられている。そしてこの化粧板18は、このような化粧紙G、芯材H、保護材Jを順に積層し、成形加工工程Wでコ・キュア加圧成形法を実施することにより、これらが一体的に成形されてなり、化粧紙Gと芯材H間が、芯材Hのアリアレグ23にコートされたアクリル系接着剤24にて接着されると共に、芯材Hの2枚間は、両アリアレグ23のフェノール系樹脂22により接着さ

れる。さてそこで、この化粧板18は、次の第1、第2、第3、第4、第5、第6のようになる。

【0019】第1に、この化粧板18は、その化粧紙Gが顔料19入りフッ素系樹脂20よりなると共に、芯材Hのうち1枚はアブリレグ23にアクリル系接着剤24をコートしたものをを用いてなり（図5の化粧板10のように、50ミクロン程度のフィルム状のアクリル系接着剤13を1枚単独で用いない）、積層構造の数が4枚と非常に少ないので、厚みが0.35mmで1㎡当たりの重量が500g程度と、極めて肉厚が薄く重量も軽い。すなわち、図4のこの種従来例の化粧板1では、厚みが0.5mmで1㎡当たりの重量が900g程度あり、又、図5の最近開発された従来例たる化粧板10でも、厚みが0.4mmで1㎡当たりの重量が700g程度であったのに対し、この化粧板18では、図5のものと比べても肉厚が12%程度薄く、重量が30%程度軽くなっている。

【0020】又この化粧板18は、このように積層構造の数が少ないと共に、更に、成形加工工程Wでコ・キュア加圧成形法を実施することにより成形され、成形時の工程数が大幅に削減されているので、成形が簡単容易で極めて安価に得られる。すなわち、図4のこの種従来例の化粧板1が、塗工工程R、グラビア加工工程S、ラミネート加工工程T、成形加工工程Uを辿って成形され、成形時の工程数が非常に多く、又、図5の化粧板10の場合も、1枚のフィルム状のアクリル系接着剤13をセットし積層する工程に手間取っていたのに比べ、この化粧板18は、係る工程がすべて不要であり、セットされ積層されたものにコ・キュア加圧成形法を実施するだけでよく、安価に成形される。

【0021】第2に、この化粧板18は、このように積層構造の数が少なく、用いられる樹脂の種類が少ないと共に、成形時の工程数が削減されており移動が一段と少ないので、成形時に静電気が発生しない。従ってこの化粧板18は、静電気に起因する色むら、色抜け、しわ、凹凸、異物の付着・混入等の発生が確実に防止され、図4のこの種従来例の化粧板1および図5の化粧板10に比し、外観不良が確実に減少する。

【0022】第3に、この化粧板18は、まず芯材Hの織り基材21が高密度な平織りよりなり、柄が出にくいのに加え、表面の化粧紙Gは、顔料19が混入され補強されたフッ素系樹脂20よりなり、剛性、強度面に優れ厚いので、これらにより、成形加工工程Wのコ・キュア加圧成形法の実施時等において、芯材Hの織り基材21の縦糸と横糸の柄つまり生地肌が表面に出にくい。すなわち、まず図5の化粧板10は、芯材Eの織り基材14の朱子織りの柄が表面に出ることが依然として指摘されていたのに比べ、この化粧板18にあっては、芯材Hの織り基材21に高密度な平織りのものをを用いてなるので、柄が極めて出にくい。又、図4のこの種従来例の化

粧板1のように、化粧紙Aのフッ素系樹脂2が柔らかく25ミクロン程度と薄く、芯材Bの織り基材6の柄が表面に出やすかったのに比べ、この化粧板18にあっては、強く50ミクロン程度と厚い化粧紙Gにより、芯材Hの織り基材21の柄が表面に出る外観不良は確実に防止される。

【0023】第4に、この化粧板18は、芯材Hの織り基材21が高密度な平織りよりなり、方向性が比較的少なくフラットとなりやすいので、全体的にもカールが発生しにくい。すなわち、図4のこの種従来例の化粧板1は、芯材Bとして2枚の所定のアブリレグ8を用い、剛性が高く強固なカールが発生しやすく、又、図5の化粧板10も、芯材Eの朱子織りの織り基材14が方向性を有しておりフラットなものが得られ難いので、依然としてカールの発生が指摘されていたのに比べ、この化粧板18では、カールは発生しにくくなる。そこでこの化粧板18は、航空機その他の内装材等として、例えば製品のパネル表面材Xやパネル外装材Zとして貼り付けられる場合に（図3参照）、フラットな母材（ハニカムコアQ又はパネル表面材X）に対し、その外周部から剥がれ出すことはない。

【0024】第5に、この化粧板18の表面の化粧紙Gは、顔料19が練り込まれて着色されたフィルム状のフッ素系樹脂20よりなる。そこで、図4のこの種従来例の化粧板1のように、表面のフィルム状の透明なフッ素系樹脂2の下に、シート状の顔料4を配して着色された化粧紙Aに比し、この化粧板18の化粧紙Gは、フッ素系樹脂20が顔料19にて補強されている。従って、この化粧紙Gそして化粧板18は、長時間使用しても、摩耗しにくく耐摩耗性に優れると共に、変色しにくく変色度評価が高く耐光堅牢度に優れている。

【0025】第6に、これらと共にこの化粧板18は、芯材H中にフェノール系樹脂22を用いたこと等により、火災に際し発熱量や発煙性等が低く、耐火性に極めて優れている。そこでこの化粧板18は、例えば航空機の内装材として使用される場合、発熱量測定試験や発煙性試験において、所定の厳しい耐火基準を満たすことができる。

【0026】なお、図示例の化粧板18にあっては、その化粧紙Gの顔料19入り2フッ化フッ素系樹脂20として、無延伸タイプのフィルムが用いられている。そこで、図4のこの種従来例の化粧板1のように、その化粧紙Aの1フッ化フッ素系樹脂として、2軸延伸タイプのフィルムを用いてなるものに比し、この化粧板18の化粧紙Gは、延伸されて引っ張られていない分、成形加工工程Wでコ・キュア加圧成形法を実施した際に方向性が出にくい。従って、図示例の化粧紙Gそして化粧板18は、この点からも図4の従来例の化粧紙Aそして化粧板1に比し、しわ、凹凸、カール等の発生が防止されるといふ利点がある。

【0027】

【発明の効果】本発明に係る化粧板は、以上説明したように、化粧紙に顔料入りフッ素系樹脂を用いると共に、芯材の1枚に、高密度な平織りの織り基材にフェノール系樹脂を組み合わせたアリアレグに対し、アクリル系接着剤をコートしたものをを用いたことにより、次の第1、第2、第3、第4、第5、第6の効果を発揮する。

【0028】第1に、肉厚面、重量面、コスト面に非常に優れている。すなわち、この化粧板は極めて肉厚が薄いと共に重量も軽く、軽量化等が重要課題である航空機その他の内装材等に最適であり、しかも、成形が簡単容易で極めて安価に得られる。

【0029】第2に、静電気による外観不良が確実に防止され、外観面に極めて優れている。すなわち、この化粧板は成形時に静電気が発生しないので、静電気に起因する色むら、色抜け、しわ、凹凸、異物の付着・混入等、外観不良が防止され、不良率も非常に低い。特に、この化粧板は航空機その他の内装材等として、例えばカート、ギャレー、コートクロゼット等のパネル表面材やパネル外装材として、人の目にふれ美観が重視される箇所に使用されるので、このように外観面に極めて優れることにより、製品外観を向上させる。

【0030】第3に、織り基材の柄が表面に出る外観不良も確実に防止され、この点からも外観面に極めて優れている。すなわち、この化粧板は、芯材中に用いられる織り基材の縦糸と横糸の柄、つまり生地肌が表面に出ず、外観面に極めて優れているので、上述したところに準じ、人の目にふれる箇所に使用されて製品外観を向上させる。

【0031】第4に、カールによる剥がれがなく、品質面にも優れている。すなわち、この化粧板は、芯材の方向性が少なくカールが発生しにくいので、航空機その他の内装材等として、例えばパネル表面材やパネル外装材として貼り付けられる場合に、フラットな母材に対しそ

の外周部から剥がれ出すようなことがなく、品質面に非常に優れている。そこで貼り付けに際し、接着剤の使用管理が複雑化することがなく、又、熟練した取り扱いを要することもなく、工数が削減される。

【0032】第5に、これらと共に、耐摩耗性等の強度面や耐光堅牢度にも優れている。すなわち、この化粧板は長時間使用しても摩耗しにくい等、強度面に優れると共に、変色しにくく耐光堅牢度にも優れている。

【0033】第6に、そして耐火性に極めて優れている。すなわち、この化粧板は、発熱量や発煙性等が低く耐火性に極めて優れ、ハイレベルの耐火性が要求される航空機その他の内装材等に最適である。このように、この種従来例に存した問題点が一扫される等、本発明の発揮する効果は顕著にして大なるものがある。

【図面の簡単な説明】

【図1】本発明に係る化粧板の実施例の成形説明図である。

【図2】コ・キュア加圧成形法による成形時の拡大説明図である。

【図3】ハニカムパネルの断面説明図である。

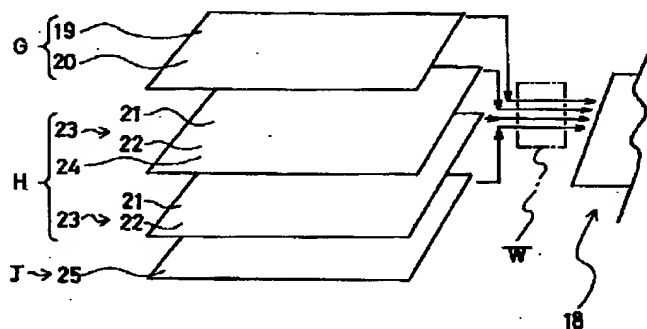
【図4】従来例の化粧板の成形説明図である。

【図5】最近開発された従来例の化粧板の成形説明図である。

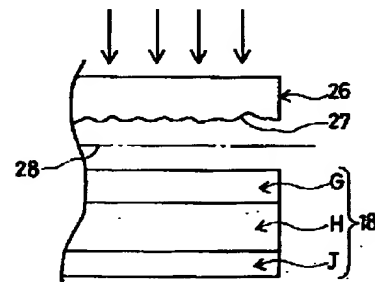
【符号の説明】

- 18 化粧板
- 19 顔料
- 20 フッ素系樹脂
- 21 織り基材
- 22 フェノール系樹脂
- 23 アリアレグ
- 24 アクリル系接着剤
- G 化粧紙
- H 芯材
- W 成形加工工程

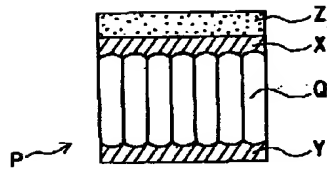
【図1】



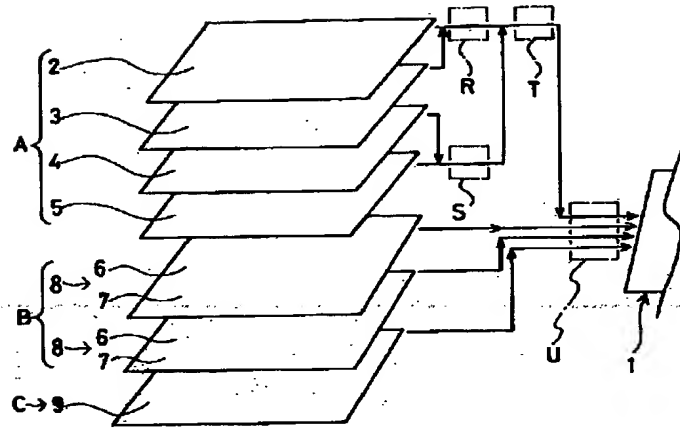
【図2】



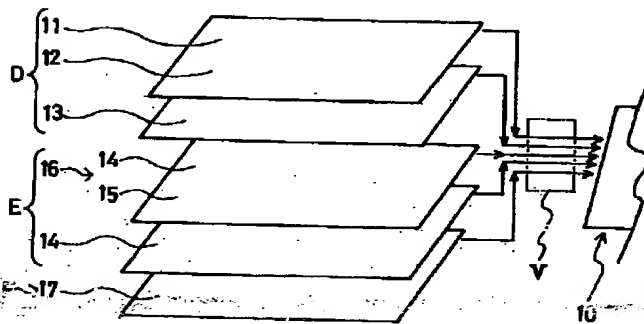
【図3】



【図4】



【図5】



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